Amendments to the Specification

Please replace the paragraphs beginning at page 5, line 9, with the following rewritten paragraphs:

Suitable thermoelectric devices may be constructed from: 1) metallic wire thermocouples including, but not limited to iron-constantan; copper-constantan; chromel-alumel; chromel-constantan; platinum-rhodium alloys and tungsten-rhenium alloys, 2) discrete element semiconductors assembled in alternating p- and n-type arrays connected electrically in series, parallel or series/parallel. All combinations that can be prepared as p-type semiconductors are suitable. Examples of such p-type materials that may be employed include, but are not limited to, bismuth telluride, lead telluride, tin telluride; zinc antimonide; cerium-iron antimonide; silicon-germanium. All combinations that can be prepared as n-type semiconductors are also suitable. Examples of such n-type materials that may be employed include, but are not limited to, bismuth telluride, lead telluride, cobalt antimonide; silicon-germanium. The thermoelements can further be formed of sputter deposited thin films of Bi_xTe_y, Sb_xTe_y and Bi_xSe_y alloys where x is typically about 2 and y is typically about 3.

While not meant to be limiting, preferred thermoelectric devices are composed of thin film semiconductors such as bismuth telluride sputter deposited as thin films on a substrate, as described in US patent application Serial No. [[________________]] 10/726,744 entitled "THERMOELECTRIC DEVICES AND APPLICATIONS FOR THE SAME" the entire contents of which are hereby incorporated herein by this reference. Other suitable thin-film devices include superlattice and quantum well structures. As shown in FIG. **1**, the present invention is advantageously used to provide power to sensors **4**, such as but not limited to those used for remote region monitoring and surveillance, measurement of ambient conditions such as environmental temperature, pressure, humidity and intrusion in remote areas and measurement and control of building environments and energy. The present invention may further be combined with a battery, capacitor, supercapacitor and any suitable device **5** that stores energy electrically for alternately storing and discharging electrical energy produced by the thermoelectric device. The combination of the present invention with any other combination of one or more sensors **4**, transmitters **6**, voltage amplifiers **7**, micoprossessors **8**, data storage

means **9**, batteries or electrical storage devices **5** and voltage regulators **10** wherein the sensor(s) **4**, batteries or storage devices **5**, voltage amplifiers **7**, micoprossessors **8**, data storage means **9**, voltage regulators **10** and transmitters **6** are all ultimately powered by the electrical energy from the thermoelectric device **2**, represents a preferred embodiment of the present invention. Once set in place, such a device is capable of gathering and transmitting data gathered by the sensor to a remote location for an essentially indefinite period of time and potentially for the lifetime of the application with no further human intervention required. The operation and advantages of the present invention are illustrated in the detailed description of a preferred embodiment that follows. However, this preferred embodiment is merely provided for such illustrative purposes, and the present invention should in no way be limited to the specific configuration described therein.

Please insert the following beginning at page 6, line 27:

FIG. 5 illustrates an embodiment the disclosed TE power source in which TE thin film modules are wound about a spindle.

FIG. 6 shows an embodiment of the disclosed n-type and p-type TE thin films deposited on a flexible substrate wherein the n-type and p-type TE thin films are connected in a series-parallel arrangement.

Please replace the paragraph beginning at page 8, line 3, with the following rewritten paragraphs:

Commercial discrete element thermoelectric elements assembled in the conventional configuration shown in the left hand side illustration of Fig.4 while useful in demonstrating the principles in this invention, typically have low-voltage outputs resulting from relatively low length to cross sectional area (L/A) ratios that require a separate voltage amplifier, as described above. The preferred solution is to use thermoelectric element composed of a plethora of miniature thin-film thermocouples with high length to cross-section ratios supported by a substrate shown in the right hand side illustration in Fig. 4 and described in greater detail in the companion US patent application Serial No. [[________________]] 10/726,744entitled "THERMOELECTRIC DEVICES AND APPLICATIONS FOR THE SAME." More specifically, the disclosed TE power sources comprise, in part, arrays of TE couples having multiple thermoelements (e.g., an n-type and a p-type thermoelement pair). The thermoelements form the modules (thermocouples) for converting thermal energy to electrical energy. Such thermoelements typically comprise thin films of TE materials having L/A ratios greater than about 500 cm^{-1}. The devices include modules where thin films of p-type and n-type TE materials are deposited, e.g., on a suitable flexible substrate and are electrically connected to one another in series or in series-parallel. In one particular embodiment the TE power source 200 comprises multiple TE couples forming an array of modules 235 deposited onto a flexible substrate 240 (FIG. 5). The array of couples 235 is wound in a coil like fashion and positioned between hot and cold junctions 250 and 260. The array module 235 may simply form a coil or may be wound about an apparatus such as a spindle 280. Such a configuration provides an even smaller TE power source without sacrificing power output. Thermocouple assemblies of the latter type may be designed with output voltages higher than those typical of the discrete element type and are inherently more compact. The advances embodied in the preferred thin-film thermocouple concept enable this invention to be more efficient and compact and to be functional in simpler and cheaper assemblies.

Figure 6 illustrates one embodiment of the thermoelectric power source comprising multiple p-type thermoelements in parallel with each other and connected in series with a single n-type thermoelement. It will be recognized by those skilled in the art that other embodiments may include multiple n-type thermoelements in parallel with each other and in series with a

single p-type thermoelement, or alternatively multiple n-type thermoelements in parallel with each other and in series with multiple p-type thermoelements. These and other embodiments would fall within the spirit and scope of the present disclosure.